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31 March 2022

Mr Andrew Hall  
Deputy Chief Inspector of Rail Accidents  
Cullen House  
Berkshire Copse Rd  
Aldershot  
Hampshire GU11 2HP

Dear Andrew,

**RAIB Report: Runaway of a maintenance train near Markinch, Fife on 17 October 2017**

I write to provide an update<sup>1</sup> on the action taken in respect of recommendation 1 addressed to ORR in the above report, published on 11 January 2018.

The annex to this letter provides details of actions taken in response to the recommendation and the status decided by ORR. The status of recommendation 1 is **'Implemented'**.

We do not propose to take any further action in respect of the recommendation, unless we become aware that any of the information provided has become inaccurate, in which case I will write to you again.

We will publish this response on the ORR website on 5 April 2022.

Yours sincerely,



Oliver Stewart

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<sup>1</sup> In accordance with Regulation 12(2)(b) of the Railways (Accident Investigation and Reporting) Regulations 2005

## Recommendation 1

*The intent of this recommendation is to prevent runaway of MPVs following collisions with objects or debris on the track.*

Network Rail should identify and implement suitable measures to mitigate the risk of a runaway initiated by multiple unintended operations of the brake distributor release mechanisms on its Windhoff Multi-Purpose Vehicles by objects and debris that might reasonably be encountered on the track during operation. This recommendation may also apply to other infrastructure managers and railway undertakings who own and/or operate similar short formation trains.

### ORR decision

1. Network Rail provided us with a list of options that they had considered to mitigate the risk of debris striking the brake distributor and causing a runaway of the Windhoff Multi-Purpose Vehicles.
2. Network Rail have already implemented a software change that applies the handbrake in such a circumstance, however we requested further detail behind the decision not to relocate the brake distributor. We were content with Network Rail's verbal explanation provided at a meeting on 24 February 2021, but have been awaiting a written response fully setting out the justification.
3. This written response has now been received and confirms that the cost of a 2-3 year programme to change the location of the brake distributor is significant on a fleet with a limited lifespan. Given that the software change has already been introduced, relocating the brake distributor offers limited benefit at a significant cost, and therefore Network Rail have concluded that it is not reasonably practicable.
4. The information provided by Network Rail was reviewed by an ORR rail vehicle engineer, who agreed with their position and concluded that the recommendation had been implemented.
5. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Network Rail has:
  - taken the recommendation into consideration; and
  - has taken action to implement it

***Status: Implemented.***

### Previously reported to RAIB

6. On 10 January 2019 ORR reported the following:

We asked Network Rail to explain the process they carried out that informed the decision to modify the software on the MPVs. We have also asked for an explanation of what the expected outcome of the software upgrade is and how it will change the functionality of the vehicles. An initial response has been provided to these questions (see para 7), pending a meeting between ORR and Network Rail to discuss the issues identified in more detail.

## Update

7. On 9 May 2019 Network Rail provided the following closure statement:



Markinch Rec 1  
closure statement - :

8. Network Rail state in summary the following:

*Network Rail have designed and implemented modifications to the seasonal MPV brake system to mitigate the risk of a runaway initiated by multiple unintended operations of the brake distributor release mechanisms on its Windhoff Multi-Purpose Vehicles by objects and debris that might reasonably be encountered on the track during operation.*

9. Network Rail provided the following update on 8 March 2022 setting out the justification for modification of the MPV brake system:



Markinch ORR  
Clarification - Distrik

## Previously reported to RAIB

### Recommendation 1

*The intent of this recommendation is to prevent runaway of MPVs following collisions with objects or debris on the track.*

Network Rail should identify and implement suitable measures to mitigate the risk of a runaway initiated by multiple unintended operations of the brake distributor release mechanisms on its Windhoff Multi-Purpose Vehicles by objects and debris that might reasonably be encountered on the track during operation. This recommendation may also apply to other infrastructure managers and railway undertakings who own and/or operate similar short formation trains.

### ORR decision

1. We asked Network Rail to explain the process they carried out that informed the decision to modify the software on the MPVs. We have also asked for an explanation of what the expected outcome of the software upgrade is and how it will change the functionality of the vehicles. An initial response has been provided to these questions (see para 7), pending a meeting between ORR and Network Rail to discuss the issues identified in more detail.
2. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Network Rail has:
  - taken the recommendation into consideration; and
  - is taking action to implement it, pending a meeting between ORR and Network Rail to review the actions taken in greater detail

**Status: Progressing. ORR will advise RAIB when further information is available regarding actions being taken to address this recommendation.**

### Information in support of ORR decision

3. On 11 September 2018 provided the following initial response:

*Network Rail are designing and implementing modifications to the seasonal MPV brake system to mitigate the risk of a runaway initiated by multiple unintended operations of the brake distributor release mechanisms on its Windhoff Multi-Purpose Vehicles by objects and debris that might reasonably be encountered on the track during operation.*

*The risk identified during this incident. The first stage of modification to the vehicle software is currently being assessed through the Engineering Change process in Route Services SCO with implementation expected to commence in March 2018 and conclude 31 October 2018.*
4. On 8 January 2019, Network Rail provided further supporting information for the actions taken in response to specific questions raised by ORR:

*The process you went through to reach the conclusion to modify the software on the MPVs?*

*Network Rail held a workshop with subject experts from fleet ops, engineering, maintenance etc. Risk logs were produced to identify the failure mechanisms that led to the incident. A number of changes were considered (e.g. changes to how the vehicles are operated could impact upon their operational capability), but changes to software were identified as the most suitable.*

*How will the new software changed the vehicle functionality?*

*Changes were made to the PLC that makes brakes apply. Secondary hydraulic brake now operates automatically when air brake fails.*

*What is the expected outcome of the software upgrade?*

*If same incident happened again, secondary (hydraulic) braking would prevent runaway.*

*The response refers to the software modification being at the first stage. What further work is planned in future stages?*

*No more software changes planned. The physical release system is being changed from a steel rod to a cable, which should make it less vulnerable to the type of impact that caused the brake release at Markinch.*

*What is planned beyond the 31 October 2018 implementation date?*

*An internal review of the actions taken concluded that the mitigation measures are sufficient.*